



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/755,209	01/05/2001	Moshe Ran	SELIG-003US	5303

7590 08/23/2004
Robert D. Buyan
Stout, Uxa, Buyan & Mullins, LLP
4 Venture, Suite 300
Irvine, CA 92618

EXAMINER

PATHAK, SUDHANSHU C

ART UNIT	PAPER NUMBER
----------	--------------

2634

DATE MAILED: 08/23/2004

2

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/755,209

Applicant(s)

RAN ET AL.

Examiner

Sudhanshu C. Pathak

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on January 5th, 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on January 5th, 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____

DETAILED ACTION

1. Claims 1-to-16 are pending in the application.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 7-9 recites the limitation " $K = k_1 \times k_2$ " in lines 5-6 & "the dimension ratio k_2/k_1 " in line 6. There is insufficient antecedent basis for this limitation in the claim. The claim does not define the parameters k_1 & k_2 furthermore, the claim & the specification does not mention the term "dimension ratio". The parameters k_1 & k_2 are defined in the specification but also need to be defined in the claims. The term dimension ratio is not defined in the claims or in the specification.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-3 & 10-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) in view of Kim (5,650,782).

Regarding to Claims 1-3 & 10-12, the Applicant Admitted Prior Art (AAPA) a method and system for encoding data for transmission over a transmission

Art Unit: 2634

channel in a digital communication system (Fig. 1 & Specification, Page 1, lines 10-30 & Specification, Page 2, lines 1-2). The AAPA further discloses transferring the encoded data packets over the transmission channel by means of a data protocol (Fig. 1 & Specification, Page 1, lines 10-30 & Specification, Page 2, lines 18-30). The AAPA discloses implementing channel coding to protect data bits against perturbations during transmission over the transmission channel. The AAPA also discloses error correction for data protocol comprising block codes, convolutional codes or concatenation of both (Specification, Page 2, lines 24-30 & Specification, Page 3, lines 1-27). The AAPA further discloses product code as a representation of a linear block codes and comprising a minimum Hamming distance (Specification, Page 3, lines 14-30 & Specification, Page 4, lines 1-4). The AAPA further discloses a method for adapting the length of the code to the desired length of the data to be transmitted (Specification, Page 4, lines 5-10). The AAPA further discloses multiple techniques for improving the reliability of transmission in a wireless communication based on the quality of service terms, channel conditions, size of data packet (Specification, Page 2, lines 3-17, 26-28 & Specification, Page 3, lines 1-9). The AAPA further discloses varying the length of the product code by varying the desired parameters of the component codes (Specification, Page 3, lines 28-30 & Specification, Page 4, lines 1-4). The AAPA discloses a communication protocol for transporting variable length packets (Specification, Page 2, lines 18-23).

Art Unit: 2634

However, the AAPA does not disclose selecting an appropriate variable length code for the variable length data to be transmitted.

Kim discloses selecting an appropriate variable length code for converting source data depending on the variable length data to be transmitted

(Abstract, lines 1-14 & Fig. 2 & Column 1, lines 60-67 & Column 2, lines 1-16 & Column 3, lines 30-60 & Column 4, lines 36-67 & Column 5, lines 25-35).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Kim teaches selecting an appropriate variable length code depending on the data to be transmitted, and can be implemented in the encoder as described in the communication system as described in the AAPA so as to transport variable length packets.

Regarding to Claims 13 & 16, the AAPA in view of Kim discloses a method and system of variable length data transmission over a transmission channel comprising selecting a variable length product code and encoding the data with the selected product code as described above. The AAPA further discloses a decoding method for a given data packet a method of decoding from a group consisting of hard decision decoding (Specification, Page 4, lines 15-29), soft decision decoding (Specification, Page 5, lines 3-27) and iterative soft decision decoding (Specification, Page 5, lines 28-30 & Specification, Page 6, lines 1-15). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that a Kim in view of AAPA satisfies the limitations of the claim, furthermore, even though Kim does not explicitly discloses a decoder, it would be obvious for a

corresponding decoder to be implemented to decode the received encoded transmission signal at the receiver.

Regarding to Claim 14, the AAPA in view of Kim discloses a method and system of variable length data transmission over a transmission channel comprising selecting a variable length product code and encoding the data with the selected product code as described above. The AAPA further discloses the digital communication system implementing the encoder / decoder to include a base station and at least one subscriber unit (Fig. 1 & Specification, Page 1, lines 10-23), and the encoder is mounted in the subscriber unit (Specification, Page 1, lines 24-30) and wherein the base station includes a code selecting unit arranged to select a variable length product code which is suitable for the variable length data to be encoded and a transceiver for transmitting parameters of said selected code to said encoder in the subscriber unit (Specification, Page 2, lines 8-17). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that AAPA in view of Kim satisfies the limitation of the claim.

Regarding to Claim 15, the AAPA in view of Kim discloses a method and system of variable length data transmission over a transmission channel comprising implementing the encoder / decoder to include a base station and at least one subscriber unit, further comprising selecting a variable length product code and encoding the data with the selected product code and a corresponding decoder as described above. The AAPA further discloses a decoding method for a given data packet a method of decoding from a group

consisting of hard decision decoding (Specification, Page 4, lines 15-29), soft decision decoding (Specification, Page 5, lines 3-27) and iterative soft decision decoding (Specification, Page 5, lines 28-30 & Specification, Page 6, lines 1-15). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that a Kim in view of AAPA satisfies the limitations of the claim, furthermore, even though Kim does not explicitly disclose a decoder, it would be obvious for a corresponding decoder to be implemented to decode the received encoded transmission signal at the receiver.

6. Claims 4-6, are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Admitted Prior Art (AAPA) in view of Kim (5,650,782) in further view of Williams (Williams, D.; "Turbo Product Code Tutorial"; IEEE 802.16 Presentation Submission Template; May 1st, 2000).

Regarding to Claim 4-6, the AAPA in view of Kim discloses a method and system of variable length data transmission over a transmission channel comprising selecting a variable length product code and encoding the data with the selected product code as described above. However, the AAPA in view of Kim does not disclose encoding data in such a way so as to provide a scalable decoder complexity, and encoding data by means of Hamming Product Code and/or Parity Check Product code.

Williams discloses implementing a product code based on block codes (Slides 12-14) so as to provide a scalable decoder complexity (Slides 34-38, 48 & 60) and for multiple data packet sizes (Slides 42-44). Williams further

Art Unit: 2634

discloses implementing product codes with Hamming codes and parity check codes (Slides 11-14). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that AAPA in view of Kim in further view of Williams teaches encoding data, by means of a Hamming Product Code and/or Parity Check Product code, in such a way so as to provide a scalable decoder complexity, thus satisfying the limitations of the claims.

Allowable Subject Matter

7. Claims 7-9 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and the above mentioned 35 U.S.C. 112 rejections have been addressed.

Conclusion


8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (703)-305-0341. The examiner can normally be reached on M-F: 9am-6pm.

- If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (703)-305-4714.
- The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2634

- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sudhanshu C. Pathak



STEPHEN CHIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600